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Photograph by Frank S. Williams

NO MACHINES CAN EQUAL "ELEPHANTS A'PILING TEAK"

Whenever jams begin to form, *mabouts* (drivers) set these mighty animals to breaking up the mass of tangled beams. Elephants show uncanny judgment in picking the key log. In Siam teakwood is an important article of commerce. It is used extensively by builders because it is not attacked by termites, or "white ants," as are other woods (see Bulletin No. 1).

HOW TEACHERS MAY OBTAIN THE BULLETINS

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Siam, an Air-Conscious Oriental Kingdom

SIAM and its progressive King, Prajadhipok, have again been in the headlines. King Prajadhipok, now in England, wishes to resign, but many of his subjects are anxious to have him continue as the head of this colorful Oriental kingdom which has adopted so many western ideas.

Although wild animals still roam through Siam's secluded jungles, thousands of well-educated Siamese are more interested in aviation than in herding elephants or baiting tiger traps. Isolated districts in many parts of Siam have been brought into close touch with Bangkok, the capital city, by means of newly-extended airplane lines.

Aviation began in Siam, as in a number of other countries, as a military activity. Students were sent abroad and trained, not only in the art of flying, but also in the engineering of plane building. Returning to their homeland, they taught other Siamese how to become pilots and supervised the work of making new planes and building airports.

Modern Airport Near Capital

At Don Muang, about 20 miles north of Bangkok, the officers laid out a flying field and erected complete workshops for building all parts of the planes, except the motors, which were purchased in France (see illustration, next page). For some years the country has had an active fleet of more than 200 planes, including scouts, bombers, and Red Cross ambulance planes.

The Siamese have a flair for flying, and are good mechanics as well as excellent pilots. They execute breath-taking dives, loop-the-loops, and spins during their courses of training with as great skill as pilots in any other land. Careful and efficient, they have a record of very few accidents since the first commercial line was opened in 1922.

Aviation is of great assistance in this large nation where rich areas have not yet been opened up by roads or railways. Especially has this been true in the eastern districts.

Siam a Natural Air Center

Siam offers the safest and most economical gateway from Europe to the extreme reaches of southeast Asia, and far Pacific regions. It lies on a nearly direct route from Europe and India to Java, Australia, and the Philippines, and also forms the natural junction for sky routes to French Indo-China, Hong Kong, and portions of populous China. Although large areas are covered with jungle, Siam, for the most part, does not offer as many air hazards as do nearby territories, for it is entirely free from typhoons.

Sensing the importance of this strategic position on the Far Eastern air lanes, Siam has taken steps in making the country safe for commercial flying by clearing fields and placing ground facilities in many districts.

Already the Dutch are operating a regular service from the Netherlands to Sumatra and Java. The French first opened a connecting line from Saïgon to Bangkok to transfer mail and passengers to the Dutch line, but have recently started, in addition to this, a fortnightly service direct to Marseille. The Imperial Airways to Australia has reached Delhi, and will soon be extended eastward to Rangoon.

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WHEN SPRING COMES TO THE ANTARCTIC

The life-giving season of temperate zones is not a period of wild flowers and bird songs down in the world's least-known continent. But there is more sunshine and less ice and snow, and dog teams from Little America yelp and frolic as they pull heavy sledges of supplies between ships and the expedition's base. Another spring has come to Little America, and soon dog teams will be hauling thousands of letters from the supply ships to the farthest south post office. There the letters will be cancelled and returned to stamp-collectors all over the world (see Bulletin No. 5).

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Atlantic City Solves a Traffic Problem

ATLANTIC CITY, the New Jersey seashore resort, recently laid the cornerstone of a new union railroad station, the first unit in a $5,000,000 project which will unite its steam railroads, eliminate grade crossings, and provide a new boulevard along the right-of-way of abandoned railroad tracks.

The loading platforms of the new union station are each more than a fifth of a mile long, and are capable of accommodating sixteen-car trains.

"Less than one hundred years ago Atlantic City was a nameless cluster of fishermen's huts on Absecon Island, off the coast of New Jersey," writes E. John Long in a communication to the National Geographic Society.

"Then came rails from Camden (across the Delaware from Philadelphia), and the first excursion train, July 1, 1854, drawn by a wood-burning engine. Its 500 passengers taxed the pioneer resort. But what would its early innkeepers say now if they could see Atlantic City receiving 500 visitors *every minute* during twelve hours of a July Fourth or a Labor Day week-end!

Welcomes 12,000,000 Visitors a Year

"All the great treks of history—the Persians under Xerxes, the Huns under Attila, the Moslems under Mohammed II, the 'Golden Horde' of Tatars, the Norman invasion of England, and the Crusades—shrink to thin ranks when measured against Atlantic City's 12,000,000 annual visitors, who arrive not only by train but by bus, motor car, boat, and plane.

"This amazing traffic to a 'sand bar ten miles long and seven miles at sea' is equal to the population of a nation like Argentina or Canada, or almost twice the population of the Australian Continent.

"Most famous of Atlantic City institutions is, of course, the Boardwalk. Beginning at the Inlet this wide promenade parallels the ocean shore for seven miles through Atlantic City, and the adjoining cities of Ventnor, and Margate. Not all of Atlantic City's 12,000,000 annual visitors swim, sail, fish, or take part in the other amusements the resort affords, but all of them walk, or ride in a rolling chair, along this incomparable 'Wooden Way' (see illustration, next page).

"Morning, noon, and night the tap, tap, tapping of thousands of heels and toes resounds on planks where the pedestrian is king and where walking is no lost art. Rich man, poor man, artist, lawyer, merchant, actress, the Colonel's lady, and Judy O'Grady pass in review, to see and to be seen.

When the Boardwalk Could Be Moved

"No one knows just when this greatest of promenades began. Loose boards were laid on the sand around Civil War time. Tiny shops and bathhouses bordered the landward side. The planks were taken up at the end of the season and stored a safe distance from the reach of winter waves.

"To-day's Boardwalk is a giant highway, as wide as a boulevard, carried on high concrete pillars and steel beams. Sixty miles north it is almost equaled in the Asbury Park boardwalk, and many other New Jersey resorts imitate it.

"What a paradox this Boardwalk presents! Often it is one of the busiest thoroughfares in the world. Yet in that very bustle is leisure.

"Something reminiscent of the country fair is here. On a pier a dozen haggard couples dance a marathon, shuffling around a waxed floor for more than 2,000 hours. Convention delegates crowd a mammoth auditorium. Salt-water-taffy machines flick out morsels before your eyes. A Boardwalk photographer will take a 'celebrity picture' of you. As you stroll toward him he steps up and snaps you.

How "Salt Water Taffy" Was Named

"Next to the visitor, Atlantic City's biggest 'industry' is the making and shipping of 'salt-water taffy.' Legend says that in the early eighties a man had a candy stand on the beach. One day an unusually high tide splashed over a batch of old-fashioned, pulled taffy on a slab. Being an enterprising person, he told his customers that he had something new—'salt-water-taffy.'

"The name struck a popular note, and to-day batteries of salt-water-taffy machines make

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From Rangoon it is a span of about 1,250 miles to Hong Kong, to tie up trade on the China coast with air routes to European capitals. To bridge a portion of this gap the Siamese have organized the Aerial Transport Company of Siam, Ltd., to operate over the 1,000-mile skyway from Rangoon as far as Hanoi, French Indo-China, where it will one day be connected by seaplane service to Canton and Hong Kong.

Urge New Airport For Bangkok

Those flying over the present routes are already asking why the Siamese continue to use the Don Muang airport. It is far from Bangkok and lacks good train service to allow a quick trip back and forth. Thus air passengers stopping for the night at the airport do not have even a brief glimpse of Bangkok's unique capital city.

As a result various groups in Bangkok urge the devlopment of a new commercial landing field and airport on the west bank of the Chao Phya River, at the outskirts of the city.

Note: For additional photographs and data consult: "Land of the Free in Asia," *National Geographic Magazine*, May, 1934; "Flying the World," June, 1932; "By Seaplane to Six Continents," September, 1928; "The Warfare of the Jungle Folk," February, 1928; "The Geography of Money," December, 1927; "Map-Changing Medicine," September, 1922; "Hunting the Chaulmoogra Tree," March, 1922; and "From London to Australia by Aeroplane," March, 1921.

See also: "The Map of Asia" published by the National Geographic Society.

Bulletin No. 1, November 19, 1934.

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BANGKOK'S BUSY AIRPORT IS AN AERIAL CROSSROADS

Large planes and small call at Don Muang, some 20 miles north of the Siamese capital, en route from India to China and to the islands of Netherland India. Many cities in the interior of Siam are linked with the capital by air. Note the modern hangars and clubhouse, and the portable gasoline truck.

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Asphalt, from Mummies to the Mississippi

ONE more product which the United States formerly imported from abroad is now almost entirely made at home. Recent statistics of the United States Bureau of Mines show that more than nine-tenths of the asphalt used in this country is a by-product of petroleum refineries, and only 1 per cent is derived from native deposits occurring in various parts of the world, such as the famous pitch lake on the island of Trinidad, British West Indies.

Asphalt, whether natural or artificial, is a black, sticky substance famed for countless centuries as a binder, preservative, and waterproofing material. Native asphalt, or pitch, was employed by the ancient Egyptians for impregnating mummy wrappings; and Assyrian boatmen daubed it on the sides of their circular *gufas*, as they do to-day.

Streets, Highways, Airports, and Levees

Nebuchadnezzar used asphalt to smooth the streets of Babylon for the wheels of his gold-plated chariots; but many centuries were to pass before the world rediscovered asphalt's weathering qualities and the ease with which it can be combined with other paving materials.

To-day asphalt is the binding medium for an estimated three-quarters of American city streets having pavements of a higher grade than untreated macadam (see illustration, next page).

In that part of the U. S. Public Works $600,000,000 Highway program now completed, or under construction, nearly three-quarters of all highway types above the class of untreated gravel or stone roads are of asphalt, or use asphalt as a binding medium.

An equal percentage of all airport surfacing better than plain earth, gravel or cinders consists of the same material.

Property and life itself are being made safer along the turbulent Mississippi where, only this year, U. S. Army Engineers believe they have solved the century-old problem of revetting the banks to keep the stream in its channel. Great, tough waterproof mats, impregnated with asphalt, have been laid from low waterline out to the channel, thus literally paving the river bed.

Absorbs Noises in Radio Studios

While an ally of modernity, asphalt also serves as an antidote for modernity's chief nuisance—noise. Twentieth-century nerves are soothed by noiseless asphalt floors and sidewalks, and the sound-absorbing qualities of asphalt-treated roofs and walls. Radio studios use the product extensively.

The sports world is served by resilient asphalt surfaces for tennis and handball courts, and playgrounds. The arena of the Madison Square Garden Bowl, in Long Island City, New York, is of asphalt construction throughout—the first place of its kind ever built.

Versatility for industrial purposes is demonstrated by the use of asphalt for battery box walls, in the heat-resistant enamel of automobile hoods, and for moisture-proof shipping containers. Asphalt coats a protective paper for wrapping and is an essential material used in tree surgery.

From the workaday field of industry to the realm of art is an easy jump for this resilient substance. Asphalt is employed in moulding compounds for bas reliefs, frames and other plastic forms.

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more than two million pounds each year. About a third of this volume of sweetness (it is no longer flavored with salt water) is mailed out of Atlantic City to every State in the Union, and to such distant places as China, Japan, India, Egypt, Brazil, and many of the countries of Europe.

New Station To Be Completed January 1

"The new union station, which will be completed about January 1, is built of Maine granite and Indiana limestone. Its architecture is of a modified classic design. The Pennsylvania-Reading Seashore Line, which will clear all passenger trains through this terminal, is a merger of what were once fifty separate and independent railway companies operating in southern New Jersey."

Note: For other New Jersey references, including many natural-color photographs, see: "New Jersey Now!" *National Geographic Magazine*, May, 1933; "Seeing America from the Shenandoah," January, 1925; and "The Warfare on Our Eastern Coast," September, 1915.

See also in the GEOGRAPHIC NEWS BULLETINS: "Newark Airport, World's Busiest Air Terminal," week of November 20, 1933; and "'Off Barnegat,' Where *Akron* Plunged, Graveyard of Ships," week of April 24, 1933.

Bulletin No. 2, November 19, 1934.

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SURF, SUN AND SAND—THREE "S'S" EXPLAIN ATLANTIC CITY'S LURE

In less than 100 years the famous New Jersey resort has grown from a few fishermen's huts to a metropolis of 60,000, with scores of skyscraper hotels and a Boardwalk that is the most popular promenade in the Americas. Atlantic City has attracted as many as 12,000,000 visitors in a single year.

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Carnarvon, Birthplace of First English Prince of Wales

CARNARVON, birthplace of Edward II, who first had the title "Prince of Wales," is to have its quaint old town walls restored by the British Office of Works. The walls enclose a rectangular area north of Carnarvon Castle, and are guarded at intervals by drum towers and fortified gates.

More history is concentrated in smaller space in Carnarvon than in any other city in Wales. Wandering up the main street of the ancient town and turning a corner, the visitor is suddenly face to face with one of the finest castles in Great Britain.

Although to-day little more than a shell remains of the original structure (see illustration, next page), some of it has been well restored. Built entirely of hewn stone, the imposing stronghold stands on the peninsula formed where the River Seiont flows into Menai Strait, in northwestern Wales.

Every Room Has Its Legend

Every room in the splendid building has its legend, each dear to lusty-voiced guides, whose words resound down the full length of corridors which once gave entrance to a noble banquet hall 100 feet long and 45 feet wide.

There are those who would take the "Oh!" out of all history, leaving it devoid of color and sentiment. They have been busy with Carnarvon Castle; but recent historical research has brought to light facts which support the 650-year-old legend that here, in 1284, was born the first English Prince of Wales.

The story is a familiar one. During the reign of Edward I, the Welsh rose against the English, declaring that they would never acknowledge any prince "but of their own nation and language, and of an unblamable life."

Edward brought his army to Wales and put down the rebellion led by Llewelyn the Last. He then told his famous architect, Henry de Elreton, to build castles at Conway, Carnarvon, Criccieth, and Harlech, as strongholds from which in the future he might hold his unruly subjects in check.

During his long stay in Wales, Edward's queen, Eleanor, visited him at Carnarvon, and in a small room in the so-called Eagle Tower of the unfinished castle, he who was to be Edward II was born.

Of Welsh Birth, Speaking No English!

Tradition further says that the king, half in jest and half in earnest, presented the baby to the Welsh people as "a native-born prince of unblamable life, who could speak no word of English!" A few years later (1301) this son was formally named "Prince of Wales," and from that day to this the recognized heir to the English throne has borne that title.

From the towers of this stronghold, which one historian declares was built within a year by the forced labor of Welsh peasants and with money wrung from the country's chieftains, one can survey the scenes of many of the most stirring episodes of Welsh history. Here is a panorama of two thousand years, from the time when Roman legions occupied the site as the city of "Segontium" to the present day, symbolized by a bronze statue of David Lloyd George standing in the shadow of the castle walls.

A short distance from the castle is Twt Hill, below which is an immense

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Chemical Composition a Mystery

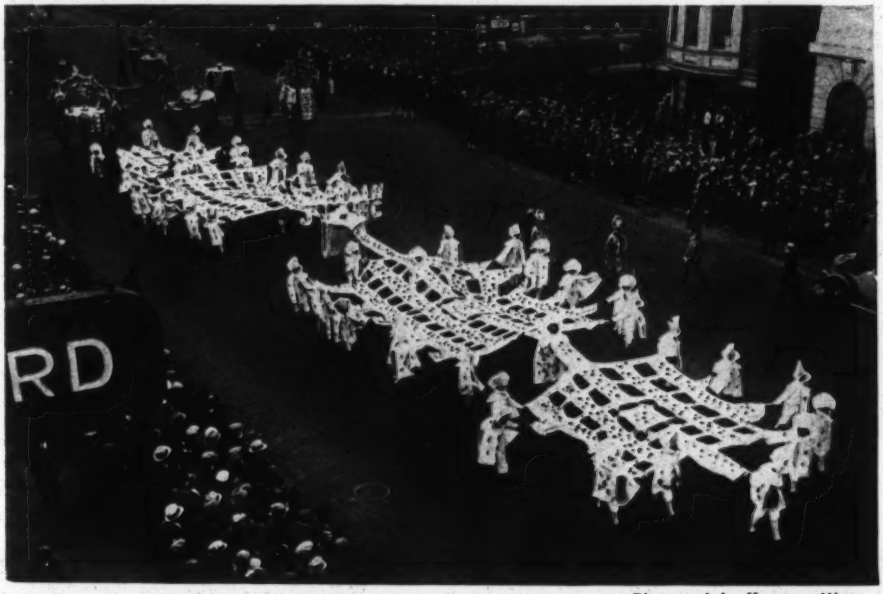
Although the exact chemical composition of asphalt is not known, chemists have found that it consists of a very complex mixture of hydro-carbons and their non-metallic derivatives. Certain of these compounds are heavy oily bodies which hold the harder solid constituents in solution. The oily bodies give plasticity, and the harder bodies provide waterproofing and cementation.

Asphalt is recovered from the crude black oils of Mexico, South America, California, and some of the mid-continent fields by a simple distillation process. Solvents such as gasoline, kerosene and gas oils are boiled off in the still, leaving the black, sticky, non-volatile asphalt behind. As the oily constituents of asphalt can also be boiled off, it is a simple matter to produce a finished asphalt cement of any degree of hardness.

Native asphalts, such as those of Trinidad and of Venezuela, have been produced over long periods of time in nature's laboratory or refinery, where the original petroleum in which they occurred was subjected to a slow process of evaporation which eventually removed the lighter solvent oils. Asphalt also occurs in certain sandstones and limestones, and in a very brittle form known as gilsonite, in Colorado.

Note: See also "A Patriotic Pilgrimage to Eastern National Parks," *National Geographic Magazine*, June, 1934; "Skypaths Through Latin America," January, 1931; "New Light on Ancient Ur," January, 1930; "How Latin America Looks from the Air," October, 1927; and "The Haunts of the Caribbean Corsairs," February, 1922.

Bulletin No. 3, November 19, 1934.



Photograph by Keystone View

ASPHALT EASES MARCHERS' FEET

Nearly three-quarters of American city streets having pavements of a higher grade than gravel or crushed rock are covered with asphalt, which is obtained from either natural deposits or as a product of oil refineries. This picture was taken during Philadelphia's Mummer's Parade on New Year's Day.

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Last Call for Mail to Little America

STAMP collectors and those who value special covers (envelopes with postmarks or cachets) will have their last chance to send mail to Little America, the world's southernmost post office and settlement, on December 5 next.

This is the final date that letters to the headquarters of the Second Byrd Antarctic Expedition in Antarctica can be received at the Washington, D. C. post office, according to an announcement made by Dr. John Oliver La Gorce, postmaster of Little America.

Already some 30,000 letters for the second cancellation have begun the 12,000-mile trip across the Pacific to Little America on the Byrd expedition ship *Bear* via New Zealand.

"First-Day Expert" Goes, Too

With them went Charles Anderson, the "first-day expert" of the Post Office Department, who will see that all the mail received for the first and second cancellations is cleared through Little America before Rear Admiral Richard E. Byrd and his gallant crew close the only Antarctic post office, and leave for home next April or May.

The final shipment of mail will be sent via the *Jacob Ruppert*, but all letters for this ship must be received in Washington, D. C., on or before December 5. More than 52,000 letters were received for the first cancellation at Little America, but, as ice conditions made it impossible to clear this huge volume of mail before the supply ships were obliged to depart last spring, many of them had to be held over until this year.

Barring accidents, all letters will be cancelled and returned next spring, and should reach addressees early in the summer of 1935.

Letters addressed to persons and institutions in practically every country and colony in the world have been received for the coveted cancellation at the Little America Post Office.

How to Send Letters to Little America

Letters for the second cancellation series will be received on the same terms as those for the first cancellation. To meet the expense of transporting mail to and from the United States and its handling, a charge of 53 cents is made for each letter, including a special stamp issued by the Government in honor of the Byrd Expedition.

The Post Office Department receives only three cents, and the Expedition the fifty cents on each letter. Stamp collectors are thus given an opportunity to become, in a small way, patrons of exploration.

As many letters as desired may be sent by those wishing to secure cancellations at the Little America Post Office. You may address letters to yourself or to friends and classmates. Place the address in the lower right corner of all envelopes so that the special Little America postmark may show clearly at the top and left of the envelope.

The addressed letters (without stamps) should be enclosed in another envelope with the usual postage affixed, and addressed to the "Byrd Antarctic Expedition, c/o Postmaster, Washington, D. C." Enclose also a post office money order

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pavilion capable of seating 8,000 persons, and yet the capacity is greatly overtaxed whenever an Eisteddfod is held in Carnarvon.

The Eisteddfodau are among the most distinctive and inspiring institutions preserved for sixteen hundred years by the Welsh. They are the famous festivals of song, music, and poetry where Welsh bards participate in contests comparable only to those of the ancient Greeks, except that here the competition is exclusively intellectual and artistic, with no place for athletics on the program.

Note: For additional Welsh references and pictures see: "Vagabonding in England," *National Geographic Magazine*, March, 1934; "A Short Visit to Wales," December, 1923; and "European Rural Scenes," February, 1914.

See also in the GEOGRAPHIC NEWS BULLETINS: "Llandudno Honors Author of 'Alice in Wonderland,'" week of October 30, 1933.

Bulletin No. 4, November 19, 1934.

NOTE TO TEACHERS

Back copies of several recent issues of the GEOGRAPHIC NEWS BULLETINS are exhausted. Hence requests from teachers who wish their files complete cannot always be filled. A lapse in your receipt of THE BULLETIN may be avoided by sending your renewal remittance of 25 cents promptly when you are notified that your subscription is expired. Because these Bulletins represent a substantial gift to schools from the National Geographic Society's educational fund, the expense of advertising or circulation promotion cannot be undertaken as would be the case with a commercial publication. The Society must rely upon supervisory officials and teachers to call them to the attention of their colleagues who might use them to advantage in their geography, social sciences, and literature classes.

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HERE THE PRESENT PRINCE OF WALES WAS INVESTED

The interior of ancient Carnarvon Castle, where, in 1911, the oldest son of King George attended ceremonies that date back to the early fourteenth century. In the left background can be glimpsed a part of the county-town of Carnarvon.

payable to the Byrd Antarctic Expedition, Washington, D. C., for 53 cents for each letter.

The Expedition stamps will be placed on the enclosed letters *in the Washington Post Office* and the letters forwarded to the Little America Post Office for postmarking and return.

Note: Students preparing units about the South Polar region will find helpful data and pictures in the following: "Conquest of Antarctica by Air," *National Geographic Magazine*, August, 1930; and "Mapping the Antarctic from the Air," October, 1932.

See also in the GEOGRAPHIC NEWS BULLETINS: "The Penguin, F. F. A. (First Family Antarctica)," week of January 22, 1934; "Following New Conquests of Antarctica," week of January 8, 1934; "South Latitude 78° 35'; West Longitude 163° 40'," week of December 18, 1933; "Little America, Antarctica, Gets a Postmaster," week of October 30, 1933; and "Admiral Byrd Takes Dogs as Well as Planes to Antarctica," week of October 16, 1933.

Bulletin No. 5, November 19, 1934.

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MAYBE THIS FINBACK WHALE WAS MERELY ASKING FOR HIS MAIL

While members of the first Byrd Antarctic Expedition were taking some photographs along the edge of the ice barrier, a leviathan of the southern seas poked his huge nose through a patch of open water. But he paid no attention to the explorers. Killer whales, traveling in schools, however, are a constant menace. When killers chase seals they sometimes dive under the ice and smash it with their noses. Explorers never know when they may be mistaken for seals!